No. 820,677. PATENTED MAY 15, 1906.

G. W. SMILLIE.

CAR COUPLING.

APPLICATION FILED AUG. 2, 1905

Fig. 1

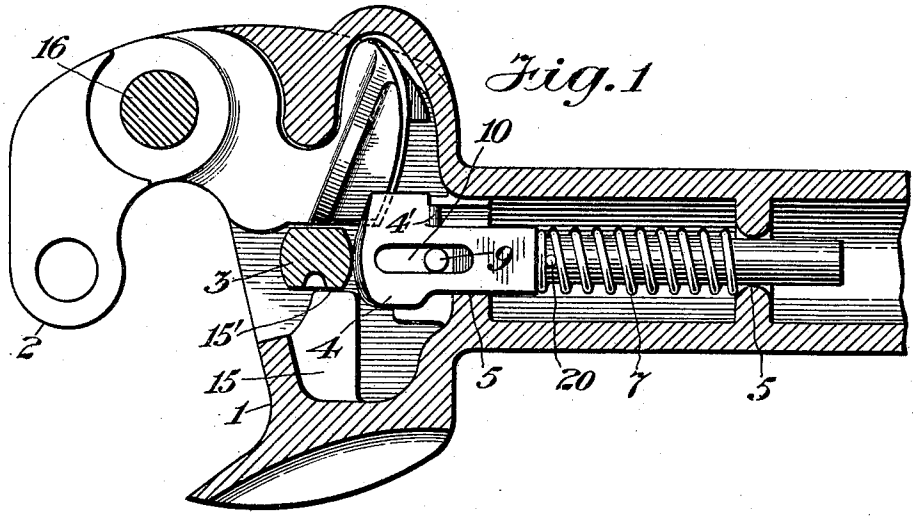


Fig. 2

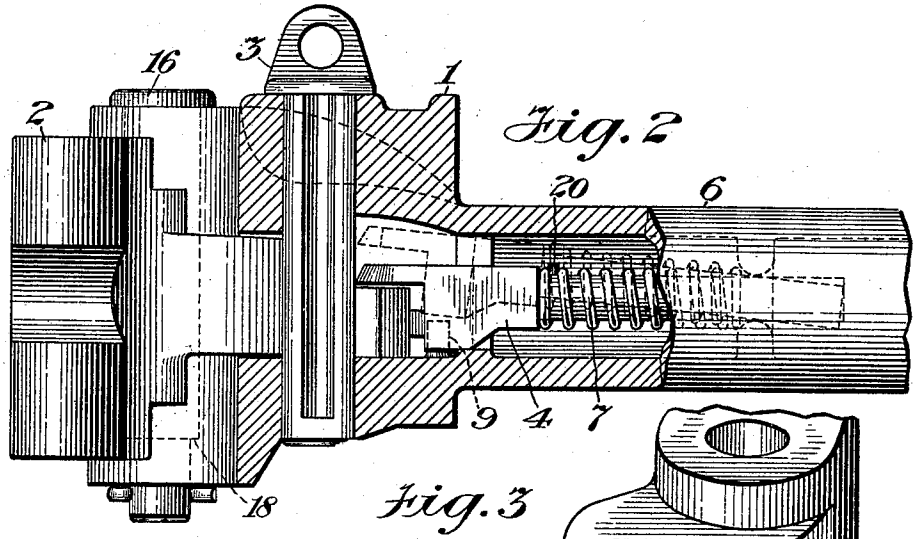


Fig. 3

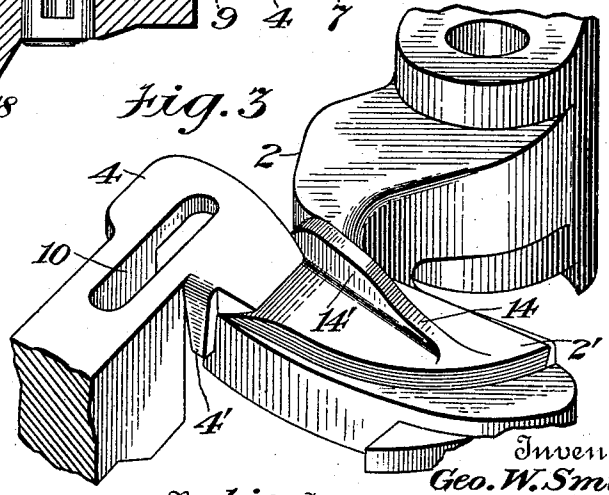
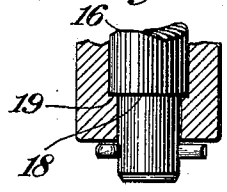


Fig. 4



Witnesses
Chas. F. Clagett
C. M. Faith

Inventor
Geo. W. Smillie
By his Attorney
Chas. F. Pope

UNITED STATES PATENT OFFICE.

GEORGE W. SMILLIE, OF NEWARK, NEW JERSEY.

CAR-COUPLING.

No. 820,677. Specification of Letters Patent. Patented May 15, 1906.

Application filed August 2, 1905. Serial No. 272,294.

To all whom it may concern:

Be it known that I, GEORGE W. SMILLIE, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

This invention relates to car-couplers of the vertical-plane type; and it consists of certain improvements in the car-coupler forming the subject-matter of a prior patent, No. 730,978, issued to me June 16, 1903.

In the car-coupler disclosed in said patent a so-called "lock" or coupling-pin support is located within the draw-head and is longitudinally movable therein to and from an operative position beneath the coupling-pin for supporting the latter in a raised or uncoupling position relative to the knuckle, this pin-support being spring-actuated to automatically move to its operative position upon the raising of the coupling-pin and being actuated to move from its said operative position by the engagement therewith of the inner arm of the knuckle upon the closing of the latter. In order to limit the pin-support in its movement under the action of the spring and also retain the same in position within the draw-head, a pin is passed through an elongated slot in the pin-support and supported at its opposite ends in the draw-head, this pin being removable from the draw-head through an opening in its under side. The fact of this pin being accessible at the exterior side of the draw-head serves as a convenient means for permitting it to be withdrawn from connection with the pin-support whenever it is desired for any reason to remove the latter from its position within the draw-head; but it is objectionable in that it enables a maliciously-inclined person by withdrawing the pin to either cause the pin-support to be moved forward from its normal position under the action of its actuating-spring, and so interfere with the proper operation of the other parts of the coupler, or else wholly remove the pin-support from the draw-head. A further objection also lies in the fact that the pin is liable to become lost, either by becoming accidentally displaced from its connection with the draw-head or else being misplaced when removed in the ordinary course of repairing or otherwise.

To avoid the objectionable features referred to has been one of the objects of my present invention. To this end the invention consists in providing a means within the draw-head for engaging with the pin-support to limit its movement and from which the pin-support may be disengaged or disconnected by movement in a direction other than its normal path of movement, such means in one form of my invention consisting of a fixed pin or stud on the draw-head projecting into an elongated slot in the pin-support, the relative dimensions of the parts being such as to permit of the pin-support being raised upward from engagement with the stud, and so being free therefrom to be withdrawn from its position within the draw-head. As a further feature of my invention, however, and as a means for preventing the pin-support from being withdrawn from the draw-head upon the mere raising or disengaging of the same from the stop pin or stud I have provided the pin-support with means, preferably in the form of an arm at one side thereof, that will be engaged by the knuckle-arm subsequent to the disconnection of the pin-support from the stop-pin and prevent the said pin-support from being withdrawn from the draw-head. By this means the removal of the pin-support is made dependent upon the previous disconnection of the knuckle from the draw-head.

A further object of my invention is the provision of means for preventing loss or disconnection of the knuckle pivot-pin from the draw-head of the coupler in the event of its breakage. To this end the invention consists in providing the said pivot-pin with a shoulder at a point adjacent to its lower end and below a possible point of breakage and providing the draw-head with a shoulder or ledge for coöperation with the said shoulder of the pivot-pin, whereby in the event of breakage of the latter it will be supported and prevented from dropping from its position in the draw-head.

A further object of the invention is the provision of means to prevent bending or breaking of the coupling-pin under the thrust of the engaging knuckle-arm. To this end the invention consists in locating a bearing-wall within the opening in the draw-head, in which the knuckle-arm swings in a position to en-

gage the coupling-pin on that side thereof opposite that which is engaged by the knuckle-arm when the several parts of the coupler are in normal locking or coupling position.

Another object of the invention is the provision of means for preventing undue friction between the engaging surfaces of the coupling-pin and knuckle during the opening and closing of the latter, and thereby facilitating their proper operations. To this end the invention consists in providing the knuckle-arm with a raised relatively narrow flange upon which the lower end of the pin will rest and ride during the opening and closing movements of the knuckle. A further and important feature of this flange in addition to the performance of the function noted is the fact that it also serves as a means for regulating the forward movement of the pin-support under the action of its forwardly-operating spring.

Referring now to the accompanying drawings, forming part of this specification, Figure 1 is a horizontal section through a coupler embodying my invention. Fig. 2 is a side elevation of the same with the draw-head partly broken away and in section. Fig. 3 is an enlarged perspective detail view showing the engagement of the pin-support by the inner knuckle-arm, and Fig. 4 is a sectional detail showing the coöperating shoulders of the knuckle pivot-pin and draw-head.

In the drawings the draw-head 1, the horizontally-swinging hook or knuckle 2, the vertically-movable coupling-pin 3, and the pin-support 4, supported within suitable guides 5 5 in the shank 6 of the draw-head to be longitudinally movable therein to and from a position beneath the coupling-pin for supporting the same in a raised or uncoupling position, are all substantially as found in the coupler disclosed in my said prior patent, No. 730,978.

In accordance with my present invention I have located a short pin or stud 9 on the lower inner wall of the draw-head in a position to project into an elongated slot 10 in the pin-support and operate to limit the forward movement of the latter under the action of its actuating-spring 7. The space in the draw-head between the upper wall thereof and the top of this pin or stud 9 is such as to permit of the pin-support being raised above and disengaged from said pin or stud, as shown by dotted lines in Fig. 2. When so disengaged, the pin-support is free to be withdrawn from the draw-head after the knuckle is disconnected therefrom. During such time as the knuckle is connected with the draw-head, however, the pin-support is prevented thereby from being withdrawn or removed from the draw-head through the medium of an arm or part 4′ projecting from the pin-support into a position to be engaged by the knuckle, as most clearly shown in Fig. 3.

As an additional and auxiliary means for limiting the forward movement of the pin-support 4 under the action of the spring 7 after being released by the coupling-pin I have provided the inner arm 2′ of the knuckle with a relatively narrow raised flange 14 on its upper surface, which is so arranged as to present a vertical stop-wall 14′ in a position opposite the end of the pin-support, as most clearly shown in Fig. 3, the said flange being of sufficient length to have a portion of its stop-wall 14′ in a position opposite the end of the pin-support at all times—that is, both while the parts are in their normal closed position, as shown in the drawings, and also during the opening and closing movements of the knuckle. A further and important function of the said flange 14 in addition to that described is that it passes beneath and supports the coupling-pin during the opening and closing movements of the knuckle, and so operates by reason of the small area of surface presented for contact with the coupling-pin to minimize the friction between the engaging surfaces of said parts, which friction when the parts are more or less rusted is ordinarily very considerable.

The draw-heads of vertical-plane car-couplers are made with a central horizontal opening to receive and permit of movement of the inner arm of the pivoted knuckle, and which said opening intersects the vertical coupling-pin opening. As the said horizontal opening is of a vertical depth equal to about one-third the entire depth of the draw-head, it results in about one-third of the coupling-pin, at a point when it is engaged by the knuckle-arm, being unsupported by any direct means against lateral thrust as produced by the engagement therewith of said knuckle-arm. Because of the coupling-pin being thus unsupported at the central part thereof it often happens that it becomes broken or so bent as to render it unfit for use, and to avoid possibility of this I have located on the lower wall of the said horizontal opening in the draw-head a raised projection 15, which is arranged to present a bearing-wall 15′ for engagement with the central portion of the coupling-pin at a point opposite that which is engaged by the knuckle-arm, as shown in Fig. 1, and operate to directly support the same against bending or breaking under any lateral thrust by the said knuckle-arm. It also happens that the knuckle pivot-pin (indicated at 16) sometimes becomes broken, in which event the lower broken end or portion of the pin drops from its connection with the draw-head, and in the further event of such broken end dropping and resting upon the track it is liable to result in the derailment or other accident to the car. Therefore to guard against the possibility of such accident I have provided a means for preventing the dropping or disconnection of any part of the pivot-pin

from the knuckle in the event of its breakage, which means comprises an annular shoulder 18 on the pivot-pin, formed by reducing the diameter of the lower end of the latter, and an annular shoulder or ledge 19 in the pivot-pin opening of the draw-head for coöperation with the said shoulder of the pivot-pin, as most clearly shown in Fig. 4. As the said shoulder 18 of the pivot-pin is located at a point adjacent to the lower end of the pin and at a point below a possible point of breakage, it is obvious that any possibility of the pin dropping or becoming disconnected from the draw-head is avoided.

In order that the actuating-spring 7 for the pin-support may be retained in connection with the latter when it is inserted into or removed from its position in the draw-head, I have located a pin 20 on the shank of the lock-support in a position to enter between the coils of the spring, and so hold the latter against longitudinal displacement from the pin-support.

Having thus set forth my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support movable to and from an operative position for supporting the said coupling-pin, and means for limiting the movement of the pin-support and from which the latter may be disengaged by movement in a direction other than its normal path of movement.

2. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support movable to and from an operative position for supporting the said coupling-pin, and a fixed pin or stud for engaging with and limiting the movement of the pin-support and from which the latter may be disengaged by movement in a direction other than its normal path of movement.

3. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a spring-actuated pin-support located within the draw-head and being movable therein to and from an operative position for supporting the said coupling-pin, and means for limiting the movement of the pin-support under the action of its spring and from which the pin-support may be disengaged by movement in a direction other than its normal path of movement.

4. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support located within the draw-head and being longitudinally movable therein to and from an operative position for supporting the said coupling-pin, and a fixed pin or stud for engaging with and limiting the longitudinal movement of the pin-support and from which the latter may be raised from engagement, for the purpose set forth.

5. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support located within the draw-head and being longitudinally movable therein to and from an operative position for supporting the coupling-pin, the said pin-support being provided with a longitudinal slot therein, and a fixed pin or stud projecting into the said slot in the pin-support for limiting the longitudinal movement of the latter and from which the pin-support may be raised from engagement, for the purpose set forth.

6. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support removably located within the draw-head and being normally retained against removal therefrom by the knuckle.

7. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support located within the draw-head and being movable therein to and from an operative position for supporting the coupling-pin, and a stop for limiting the movement of the pin-support and from which the latter may be disconnected by movement in a direction other than its normal path of movement, the said pin-support being normally retained by the knuckle against removal from the draw-head subsequent to its disconnection from the said stop.

8. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support located within the draw-head and being movable therein to and from an operative position for supporting the coupling-pin, means for limiting the movement of the pin-support and from which the latter may be disconnected by movement in a direction other than its normal path of movement, and means carried by the pin-support for engagement with the knuckle to prevent removal of the pin-support from the draw-head.

9. In a car-coupler, the combination, with a draw-head, a swinging knuckle, and a coupling-pin for the knuckle, of a pin-support removably located within the draw-head, an actuating-spring for said pin-support, and means for retaining said spring in connection with the pin-support, for the purpose set forth.

10. In a car-coupler, the combination of a draw-head, a swinging knuckle, a coupling-pin for the knuckle, a pin-support located within the draw-head and being movable therein to and from an operative position for supporting the coupling-pin, and means for

automatically moving the pin-support forward to an operative position upon the raising of the coupling-pin, the said knuckle having a raised portion or flange on the upper side of its inner arm for limiting the forward movement of the said pin-support.

Signed at New York, in the county of New York and State of New York, this 21st day of July, A. D. 1905.

GEORGE W. SMILLIE.

Witnesses:
CHAS. F. DANE,
E. M. FAITH.